

REMARKS

In response to the Office Action mailed May 21, 2008, Applicants request reconsideration of this application in view of these remarks and amendments. Claim 24 is amended to provide proper antecedent basis.

I. Restriction Requirement

The restriction requirement of claims 32 and 33 is traversed. These claims are not directed to an unelected species. The original restriction requirement was on the basis of a process of making and product made distinction and an intermediate-final product relationship. Applicants elected group II directed to a nanoparticle product. The new claims are also directed to the nanoparticle product of elected group II, just in different terms. Furthermore, both the product of the claims of group II and the product of claims 32 and 33 may be used in rubber compositions, *i.e.* they have the same mode of operation. Finally, it would entail little to no extra effort to perform an examination and search on nanoparticles of the structures defined in the currently pending claims. Therefore, Applicants request that the restriction requirement be withdrawn.

II. Rejections Under 35 U.S.C. § 103

Regarding the rejection of independent claims 10 and 32 and their dependent claims, each of these claims require mono-block polymer chains as part of the nanoparticle. Krom does not teach or suggest this feature. Applicants submit herewith a Declaration under 37 C.F.R. § 1.132

by two Ph.D. research scientists¹ that cites to a well-known and respected text on the subject of living anionic polymerization for support. This Declaration refutes the Examiner's position that Krom's disclosure at column 3, lines 16-19 can be properly interpreted to disclose or suggest the formation of monoblock polymer chains in the nanoparticle.

As of the filing of this amendment, the Examiner's interpretation of what would occur when additional monomer is added in Krom at column 3, lines 16-19, is unsupported by any evidence. Such allegations on chemical theories cannot be made without support. *See*, MPEP § 2144.03(A) ("assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. *See also In re Grose*, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) ('[W]hen the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory.')." With submission of the accompanying Declaration, the only evidence of record contradicts the Examiner's allegations. Accordingly, because the recited mono-block polymer limitation is not taught or suggested by any of the cited references, independent claims 10 and 32 and their dependent claims should be allowed.

Regarding both independent claim 10 and amended independent claim 24 and their dependent claims, the Office Action correctly notes that neither Krom nor EP '142 discloses the polydispersity index of about 1.5 to 10. The Office Action cites to Wang '486 as disclosing this element, yet there is a clear error in applying Wang '486 in the obviousness rejection. The

¹ Both Dr. Wang and Dr. Pawlow are employed by the owner of this application.
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forementioned Declaration filed herewith explains that modifying either Krom or EP '142 with the disclosure of Wang '486 would be ineffective to produce the polydispersity required by the claims. As previously argued, this ineffectiveness would be expected in view of the fact that Wang '486 discloses a completely different type of composition than what is disclosed in Krom and EP '142. Wang '486 describes a layered material, but this is not a core-shell polymer layered material—it is an *inorganic, clay* material. See Wang '486 column 7, line 41 – column 8, line 41. The composition disclosed by Wang '486 is a nanoclay composition that requires the presence of a layered inorganic clay substrate. See Wang '486, Examples. There is no reason to combine a teaching of polydispersity in an inorganic nanoclay polymer composition with references that only relate to core-shell polymeric nanoparticles. Clearly, the method used in Wang '486 to create nanoclay compositions is not relevant to creating the claimed polydispersity in the nanoparticles of the present claims. In fact, Wang '486 demonstrates that the use of a layered clay material is the very thing that allows controlled molecular weight and thus controlled polydispersity. See Wang '486, col. 14, lines 23-27 (“[L]ayered material Cloisite® 15A [a type of clay] affords a controlled polymerization process, *i.e.*, higher monomer conversion ... and controlled molecular weight.”). Accordingly, Wang '486 is not relevant to Krom or EP '142, nor would it enable one of ordinary skill in the art to make the claimed core-shell nanoparticles with the designated polydispersity. Thus, independent claims 10 and 24, and their dependent claims are believed to be patentable over the cited prior art.

In addition, as Applicants have strenuously argued before, the three cited references are all significantly different types of particles/compositions made with significantly different methods, and one of ordinary skill in the art would not have a reason to combine any one


reference with another. As mentioned above, Wang '486 discloses a nanoclay composition, for which a critical ingredient in the composition and process is a layered inorganic clay material. Regarding EP '142, it does not disclose living anionic polymerization of nanoparticles, nor does it show an alkenylbenzene core. The Office Action on page 4 admits as much stating that the "rubbery² core polymer [of EP '142] is formed from a polybutadiene by *emulsion* polymerization technique." Additionally, there is no reason to combine Krom with either EP '142 or Wang '486, because Krom discloses a hard (not rubbery) core, it is not a clay nanocomposite, and it even teaches away from a polydisperse nanoparticle, stating that the nanoparticles are preferably monodisperse (*See* Krom, column 2, lines 10-15). Accordingly, there is no reason or motivation to combine the references, and there is even teaching away from their combination. Therefore, for this additional reason, the claims of this application are believed to be patentable over the cited prior art.

III. Conclusion

For the foregoing reasons, the claims of this application are believed to be patentable over the prior art. Applicants respectfully request that the rejections be withdrawn and that this case be passed to issue.

² Those of skill in the art recognize that alkenylbenzenes are not rubbery.
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Respectfully submitted,



Nathan T. Lewis (Registration No. 56,218)
Jones Day
North Point, 901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-7078